THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. LXXI. THURSDAY, JANUARY 19, 1865. No. 25.

POLYPUS UTERI; ITS DIAGNOSIS AND TREATMENT.

BY WALTER CHANNING, M.D.

"Removal of polypi by ligature is really a dangerous operation, resulting not unfrequently in pyæmia and death, which seldom happens when the ecraseur is used."

THE above is copied from the London *Lancet* of Oct. 15, 1864, being the introductory remarks by J. M. Sims, M.D., of New York, to a paper on the treatment of Polypus of the Womb. The important contributions of Dr. Sims to modern surgery have placed him among the distinguished surgeons of the age, and give to his opinions on surgical subjects important practical weight. It is on account of this influence that I beg to communicate the results of ligation in many cases which have been treated by myself by this method. Before doing this let me allude to cases in which the ligature was unsuccessful—in which death followed its application.

"Dr. Duncan passed a ligature round a polypus of the fundus. As soon as he tightened it, he produced pain and vomiting; as soon as the ligature was slackened, these symptoms ceased; but whenever he attempted to tighten it, the pain and vomiting returned. The ligature was left on, but loose; the patient died about six weeks afterwards, and on opening the body it was discovered that the uterus was inverted, and that the ligature had included the inverted portion." Mr. Abernethy and Dr. Wm. Hunter both give cases of death after the application of the ligature for polypus, in which dissection showed that the polypus in each case had dragged down and partially inverted the womb, which had been encircled by the ligature, which had produced death. Roux published a case of fatal convulsions and hæmorrhage. Examination discovered a polypus and a tubercle of a similar character in the anterior wall of the womb. Roux infers that the removal of the polypus would have done no good, as the woman would have died of *tumor*—a practical error which a writer says he wonders that Roux could have fallen into. And so must any one say who reads the case and knows how success-

ful has been the ligature in the treatment of polypus. Cases will be given which will show this.

Do these cases of death after ligature affect the question of the safety of using the ligature for the removal of polypus? Death in them was the consequence of applying the ligature in cases of inverted womb. Not that the use of the ligature in cases of inverted womb is always fatal. In no case has death followed such application of the ligature in this inversion, in the cases in which the writer has either applied it, or has aided in its use, as will more fully appear in the sequel.

What is polypus uteri? It is an *insensible* tumor springing by a *pedicle* from the fundus—the body—the cervix, or the os uteri. I say "by a *pedicle*." And this is the only mode of origin and growth in the books. I have met with at least one case in which the polypus was *sessile*—having no pedicle, and forming a very striking exception to the received origin.

Polypus uteri is *insensible*. This is not only an idiopathic fact in our history, but has important practical bearings. There is one other uterine disease which has the same characteristic—*insensibility*—viz., cauliflower excrescence of the os uteri. The symptoms of the latter aid the diagnosis. Among these is profuse *watery discharge*, attended occasionally by hæmorrhage; but except in one case I never knew the first to accompany polypus, which case will be reported hereafter. There is another fact in the history of cauliflower excrescence, which, though post-mortuary, is not without interest. No matter how large and how firm during life the mass may be, nothing will be found in the vagina after death, except a small shreddy mass, with scarce any resemblance to the organized substance which existed during life.

I have seen but one case of cure of cauliflower. This occurred many years ago. The late Prof. J. C. Warren surrounded the tumor by ligature. Mrs. —— recovered. Some patients have derived benefit from the ligature. Two were able to be about and apparently well for several months. At length the disease recurred. The ligature was again used, and various means to check growth were also employed. These cases were fatal.

Prolapsus uteri may be mistaken for polypus. The os uteri will correct the error, provided sufficient care be taken to ascertain what the tumor really is. I have known *procidentia* uteri to be mistaken for *uterine inversion*.

Case.—I was walking in a neighboring city, when I met a physician of the place well known by me. He expressed great pleasure in meeting me, as he had a case of chronic inverted womb under his care, which he wished me to see with him. Before reaching the address, Dr. —— said that his patient had a child about three years ago, and that the womb was inverted at the time, or soon after, since which she had scarcely left her bed. "Has she had much, or any

hæmorrhage?" asked I. "No," said he, adding that her general health had been and was very good.

I found Miss ——, for she had not been married, looking as well as any perfectly healthy person could look. She had been well cared for, and had done nothing to diminish flesh.

My attention was soon called to the *inversion*. A large tumor, reaching half way to the knees, was lying between the thighs. No os uteri was seen, and even upon examination one was not at first discovered; but upon raising the tumor a rough spot of an inch or more diameter was seen, which exactly resembled one which is very well represented in a drawing of chronic procidentia in Clarke's plate of that displacement—which spot, in my case, looked very much like a superficial cicatrix, in the centre of which was a slight depression. I asked Dr. —— if he had a probe, or a female catheter, for I had neither. He said he had not. I asked the lady of the house if she had a lead pencil. She said yes, and brought me one of Faber's, of good length and size. It was soon cut into good shape, and was applied to the centre of the depressed spot above referred to. Slight pressure there made entrance into a cavity which admitted its whole length—six inches or more. It was next withdrawn, but nothing followed it. It had entered the os uteri. Pressure was now made with both hands upon the tumor in an upward direction, when the tumor gradually rose and entered into the cavity of the pelvis as high as was judged necessary. A compress was applied to the external organs, which was kept in its place by a T bandage. Miss —— was directed to keep quietly in bed, and carefully avoid all exertion. I saw Dr. —— some time after, and learnt that his patient had recovered perfectly.

Suppose for an instant that I had, on the representation of Dr. ——, proceeded to apply a ligature, what would, under the circumstances, have probably been the result? Suppose the ecraseur had been used, as recommended by Sims, or rather as was recently done here, as I have been informed; would not the result have been the same, viz., death from hæmorrhage in two hours, more or less? How could such a mistake have been made? The tumor in that fatal case was in the vagina. It was inverted womb, taken for polypus, and the ecraseur was used under that terrible error in diagnosis. I cannot understand how such a mistake could have been made. Polypus is insensible. Inverted womb is exquisitely sensible. I have had abundant opportunities to ascertain these points. Four cases of chronic inversion of the womb have come under my notice. Three of these were treated by myself, with the ligature, and in one I was an assistant. They were all of them successful as far as the operation went, but the friends of this one against positive orders raised the patient up to arrange her dress, and that of her bed, when she fainted, and at once sunk and soon died. It is singular that of the attending physicians in these four cases not one knew what was the

pathological condition of his patient. Two, who were told what it was, denied the statement, saying that they had attended the patients long enough to know that their disease was nothing but chronic uterine hæmorrhage. The pain which the application of the ligature and ecraseur always produces one would think would be enough to make the operator stop, and to learn whether it be *insensible polypus* or *sensitive womb* he has to deal with.

The latest and best English authorities tell us that when we know we have inverted womb to deal with, as a precautionary measure a ligature should be applied, lightly, for three or four days before we apply either excision or stronger ligation. This measure prepares the womb for the severer and more dangerous one to be adopted for cure. My cases occurred before this important preparation of the womb for the operation had been suggested; and it was so far anticipated by the manner of using the ligature (the ecraseur being then unknown) as to prevent dangerous, sudden strangulation. Let me add that if another case come under my care I shall apply the *ligature*, which has always in my hands been entirely successful.

In my first case of inversion I consulted one of our best surgeons as to the best mode of applying the ligature. He advised me to use force enough to strangulate the organ. There would be much suffering for a short time, but the rapid removal of the inverted organ would be accomplished. I adopted his method, and to prevent suffering etherized the patient. Mrs. —— came soon out of this state, but was at once seized by most severe suffering, apparently threatening death. The pain was referred to the abdomen—the whole of it—as if sudden and violent peritonitis had occurred. She grew rapidly cold—the pulse quick and scarcely to be felt; severe nausea; pallor. She could not speak, but expressed her sufferings by screams. Warmth was immediately applied; fomentations to the abdomen; stimulants, &c. &c., till reaction occurred. Mrs. —— had a slow, but perfect recovery. In a case of questionless polypus much pain was felt from the ligature. I at once slackened it, when the pain ceased. Upon examination, the tumor was either sessile or the pedicle very short. Moderate drawing of the ligature was now used and well borne. Recovery was perfect. This is the only case of polypus in which any trouble has followed the use of the ligature.

Many cases of polypus have fallen under my observation and care. Two of the patients furnished five cases: Miss ——, 2; Mrs. ——, 3. In the last case I removed two, by ligature, one of which was sessile, or had a very short pedicle. Its situation was peculiar. It lay *across* the pelvis, from side to side, springing from the left and crossing to the right. There was one other novel symptom, or fact, in this case. The tumor always appeared during the catamenia and disappeared in its absence. Dr. ——, living in the country, having described the case, I advised him to give Mrs. —— ergot in fair doses, and if the polypus appeared, to let me know. This he did;

and I went to ——, and found the tumor as described. But how to apply the ligature? The tumor was of large diameter, and prevented much manipulation. I introduced the canulæ of Gooch, and holding one of them at the left extremity of the tumor, in its place, carried the other to its right extremity. Here by dipping it down behind the end of the tumor, the ligature of course following it, the canula was swept along its lower portion till it met its fellow. The rings were now adjusted, the ligature tightly drawn, and the operation was completed. In a few days, the ligature being tightly drawn daily, the polypus was cut off, and recovery without accident rapidly followed. A year or two after, another polypus was discovered, accompanied by its common symptoms. There was nothing unusual in its situation, and the ligature was applied with its usual success. A year after, Mrs. —— died of pleurisy. The womb was sent to me. Its cavity was very large. The marks of the place of the former tumors were visible, and from the fundus was hanging, by a long pedicle, a third small polypus. I have operated for many other similar tumors, and all of them have done perfectly well.

Two cases only of internal polypi have come under my care. Of these I will give a sketch.

Case I.—Mrs. —— had been confined a fortnight, and had done perfectly well, when she was seized with severe hæmorrhage. This not yielding, her physician, my friend Dr. York, desired me to see her with him. This I did. He said he believed there was a polypus in the womb. I examined Mrs. ——, and was satisfied that Dr. York's diagnosis was correct. I applied a ligature immediately, large hæmorrhage existing, and drawing the ligature firmly, it came away, bringing with it a circular portion of the tumor, of the exact size and thickness of one of my coat buttons. Hæmorrhage at once ceased, and Mrs. —— made a rapid and excellent recovery. Taking all the circumstances of this case into consideration, the recent delivery, &c. &c., I cannot but think it one of the most remarkable and interesting instances of uterine outgrowths.

Case II.—I was desired to see Mrs. —— in consultation. She came from the country, and had been several months under Dr. ——'s care, and was nothing better. Dr. —— said he had discovered in the womb a foreign body, which he thought was a blighted ovum. It was irregular in outline, and was insensible. The more pressing symptoms were accumulations of water, accompanied with severe pain; great distension, which at length was followed by sudden and large discharges of water, and this by temporary relief. She was, however, a permanent invalid. Her appearance was not morbid; she had sufficient flesh, but was incapable of any exertion.

Upon examination, I felt a foreign body in the womb, which was insensible. Dr. —— had made many fruitless efforts to bring it away. In some of its characters it seemed to me to partake more of a polypoid outgrowth, and for which I advised a ligature. This

was agreed on. A small, irregular mass came away. No pain followed the application or use of the ligature. From the time of its removal, Mrs. —— began to improve. There were no longer any watery accumulations, and Mrs. —— went home. In a year, Mrs. —— came again to town and engaged me to attend her in labor, which she soon looked for. This happened in due time, and was favorably accomplished. Mrs. —— went home in perfect health. The only anomaly in this case, suppose it to have been polypus, was the watery discharge—hæmorrhage being the common attendant on polypus. It were very easy to add to the above cases of polypus in which I have used the ligature, every one of which has done well—not one fatal case having occurred. Nay, more—no dangerous constitutional disturbance has occurred in one of them.

The JOURNAL contains two cases of believed polypus, which turned out to be cases of inversion. The ligature was employed. Much suffering attended its use, but both recovered. They were communicated to two medical societies as cases of polypus, and upon examination were both found to be cases of inverted womb—bristles readily passing into and through the Fallopian tubes.

To return to the extract from the *Lancet*, in which Prof. Sims, of New York, says:—"Removal of polypi is really a dangerous operation, resulting not unfrequently in pyæmia and death, which seldom happens when the ecraseur is used."

I have never seen the ecraseur used but once, viz., in a case of ovariotomy, and I never wish to see it used again. I am very happy to say that in this feeling concerning this instrument I am supported by one of our ablest surgeons. The case in which I saw it used was one of ordinary ovarian dropsy. The patient died of peritonitis five days after. I do not object to the ecraseur because it was used in this case; for of the other cases I have seen of ovariotomy, only one patient has lived. A few days ago I asked a professional acquaintance if he had seen any instances of this operation. "Oh yes," said he, "I have lately operated three times." "And with what result?" asked I. "They all died," said he. The instrument used was not mentioned, it not being inquired after. I have used the ligature in all the cases of polypus which have come under my care, and I do not recollect a case in which there was the least appearance of local or grave constitutional disturbance. There was not in any one the least sign of *danger*.

THE Medical Department of the Army is engaged in preparing the plans for an immense hospital, to be built upon the Severn river, near Annapolis, Maryland, which will eclipse in extent and accommodation any other institution of the kind in the world—the farm on which it is to be located comprising about one thousand acres.

CASE OF NECROSIS OF THE BONES OF THE HEAD.

By Johnson Gardner, M.D., of Providence, R. I.

[Communicated for the Boston Medical and Surgical Journal.]

About three years since, in 1861, Mrs. ——, of Providence, R. I., now 43 years of age, the mother of nine healthy children, applied to me with chronic laryngitis and ulceration of the tonsils, with the palate partially destroyed and perforated with many large holes.

The whole cavity of the throat was lined with purulent matter, and the disease had extended so far as nearly to destroy the voice, articulation being so imperfectly accomplished that with the greatest apparent effort only now and then could a word be understood. The patient was also suffering with great pain in the head, the integuments being much swollen and inflamed in places over the parietal bones, with one or two open abscesses. In giving the history of her case she began by sayimg that she had been sick with a violent cough ten or twelve years previous, which continued for a long time, and was so persistent that her friends thought she had consumption; and that Dr. Miller was consulted in her case. That since that time she had employed several other physicians, and although her cough was better, in every other respect her health was much worse. She had become very much emaciated, and presented a pale, cadaverous appearance, with great loss of appetite and strength, and every indication of much suffering; her pulse was about one hundred in a minute.

My first prescription was a solution of thirty grains of nitrate of silver in an ounce of water, which I thoroughly applied to the throat daily with a curved pharyngeal syringe, ending in a perforated bulb; at the same time I prescribed twenty drops of tinct. ferri muriat., three times a day. But at the end of a week, finding the result unsatisfactory, that the disease of the throat was not much if at all arrested, and the voice almost entirely gone, I substituted therefor a lotion of acid nitrate of mercury, and applied it thoroughly, every day or two, in the manner before described. I also gave the patient four grains of iodide of potassium three times a day, and a two-grain pill of sulphate of quinine before each meal. This treatment acted like a charm. The ulceration was gradually lessened, and in the same ratio the voice was restored, till at length the disease of the throat ceased to be troublesome, and no local application, other than a gargle of solution of chlorate of potassa every morning, was required. But as the condition of the throat improved, the pain and swelling of the integuments of the cranium grew gradually worse, and about a year since the suffering had become so great and the discharge from the abscesses so profuse, that I did not believe the patient would long survive. Yet I could think of no better course than to persevere with the internal treatment. Whenever, on probing, I felt that one of the pieces of bone had become loose, I

proceeded with the aid of the scalpel and bone forceps to extract it. In this way, one after another, a number of pieces of bone have been removed. The last was taken from the head the 29th of November last, with some difficulty on account of its angular shape and its being entirely covered with integuments. With a single exception near the right eye, all the places from which pieces of the bone have been removed are now healed, leaving each a sunken, contracted, indurated cicatrix. The largest specimens are parts of the parietal bones. Two are from the superciliary ridges of the os frontis, one from each, and some of them are from the superior part of the occipital bone. Thus nearly all of the upper part of the head has been invaded by the ravages of this disease. But now, contrary to my long-continued expectations, there is an encouraging improvement in the general health, as well as the local disease. The strength has greatly improved. The voice is entirely restored, and the patient is able to superintend her domestic affairs, and enjoy the pleasures of society.

It may be supposed that the sufferer was a victim of secondary syphilis, but to support this theory no evidence other than what has been narrated can be found. The patient is a respectable woman, and there appears no good reason why her veracity should be questioned. She positively asserts that she never had a vestige of this disease in any form, and that neither her husband or any other member of her family ever had it, to her knowledge. Besides her children are, and have been, perfectly healthy.

ON CONSTRUCTION AND DEGENERATION. (WITH ESPECIAL REFERENCE TO THE LUNGS.)

By T. C. Allbutt, B.A., M.B., Cantab., Physician to the Leeds Infirmary.

In April last I had the honor of laying before the readers of this Review certain opinions on the states of the animal body in health and disease. I pointed out the growing belief that the higher ranges of vital action, correlative with certain visible developments of structure, are dependent upon the building up of more and more complex structural units; that what we call the manifestations of force in healthy function result directly from the stability of such units; that immaturity depends upon incomplete molecular construction, and disease upon the arrest or failure of it; that the processes of such failure or degeneration exhibit those of growth in an inverse series, so that resulting phenomena can only be called healthy and morbid in a special and relative sense; lastly, that the elaboration of such structural complexity depends upon the influence of neighboring matter, which has already attained the required degree of complexity, and by resolution is converting tension into energy.

If the organs, therefore, which are set apart in the higher animals

for the exercise of such energy—i. e., the "constructive glands"—fail in previous attainment of the required tension, we must find as consequences imperfect elaboration of structural elements, failing structure, and failing function. In many of those affections which are called "blood diseases" we see a dynamic change throughout the whole system. With a lessened energy of molecular construction we get diminished tension, and the changed state "ἐν δυνάμει" becomes manifest "ἐν ἐνεργείᾳ."* Structural advance is therefore proportionably slackened, and general equilibrium also disturbed, as is seen in quickened circulation and inordinate action of organs. Thus arise many forms of disease, varying in individuals as the external conditions, and as the paths of least resistance in the peculiar structure of each. For instance, a common result is fibrous degeneration, showing itself as rheumatism and fibræmia in systemic weakness, or as fibrous tumors in local weakness. Either through general or local want of tension in molecular combination, the special structural character cannot be impressed on nutritive material, and the parts degenerate from the special towards the general—that is, from the differentiated structure of a particular organ to the simpler fibrous mode common to all parts of the body. What is lost in intensity is, for the most part, gained in extensity, and the loss in quality is gained in quantity.

If the failure in tension be still greater, we descend through transitional forms from rheumatism to pyæmia, and from fibrous to cellular tumors. In gonorrhœa, for example, the contact of matter in the state of cellular degeneration tends to propagate a similar descent in contiguous matter in the bloodvessels and neighboring tissues. A greater demand is made upon the constructive glands in the vicinity, and their functions and structure thereby modified or disturbed.† If the upward processes be active, the degenerative influence produces little effect, and molecular tension is not overcome to any perceptible extent, or to an extent only perceptible in modified function. A brick taken out of a well-compacted wall is lost with indifference; if, however, the wall be less coherent, local dislocations will ensue upon the removal. If, again, the parts hang loosely together, shock or demolition will result throughout its structure. Thus, in still weaker states of the body, that diminished tension of parts caused by the influence of local purulent declension may be propagated indefinitely throughout its constructions. A general tendency to failure will, in such a case, show itself in the rigors of shaken nervo-muscular equilibrium, in the rapid pulse of shaken nutritive equilibrium, and in structural changes passing through half-rheumatic and half-pyæmic phases, down-to the dissolution of all the higher states

* In using Aristotle's words for the sake of convenience of expression, I should perhaps guard against any real distinction between the two terms as in his sense.

† This secondary disease of the glands in all parts of the body is a study of much interest. I hope during the next year or two to investigate it more thoroughly, "ne et oleum et ρpera philosophiæ nostræ perierit."

of molecular tension, in the liquid blood and cellular degradation of rapid pyæmia. The infinite multiplication of the lower forms which replace the higher is exactly parallel to that phenomenon as observed in the epidemic degenerations of animal and vegetable forms.*

How in local failure of structural tension, with diminution of resulting energy, the more special structures degenerate into the less special, sinking cadence by cadence through the infinite series of fibrous, fibro-cellular, amorpho-cellular, and amorphous degenerations, has been so ably shown by Dr. Wilks, that I need but allude to his labors.

If the reason of disease be such as I have endeavored to set forth, should we not have bestirred ourselves to clear out of our minds and out of our books all of those forms of expression which connote the foreign nature of morbid growths? Still more, should we not be very wary in allowing the use of such expressions as "deposits from the blood," and the like? In the absence of proof to the contrary, we are bound to regard all morbid products as modifications of local construction, local degeneration being the starting point.

A cancerous tumor of the pylorus is no more a deposit from the blood than is the pylorus itself. In one sense both, in another sense neither, are deposits therefrom. Neither could arise without nutritive material, and, on the other hand, neither could arise except as implicated in the development of neighboring parts. Cancer is formed in an individual as any other tissue is formed, all being alike parts of a certain scheme of evolution, and dependent on the blood only for material of nutriment. Perhaps few regard cancer from any other point of view; but if language is to be believed, still fewer look upon "tubercle" as of similar generation. The development of the body, indeed, depends on circumstances as well as on original nisus; nevertheless, some parts of certain organisms tend, in spite of all circumstance, to follow an order of structural arrangement which we call "tubercular," rather than another order, which we call normal. Both are equally natural, but the latter is the more useful. The "blood" no more deposits the one than it deposits the other. Nevertheless, many able writers persist, from habit or conviction, in speaking of the deposition of tubercle as dependent upon the blood, in some special or structural sense. Their words convey an idea of implantation from without, and they talk of finding tubercles as they would talk of finding truffles.

---

‡ Whether the so-called "parasitic" forms which accompany the degradation of superior forms, are modifications of pre-existing structural elements, as are pus-cells, or whether the originating germs be introduced from without, is of secondary importance in this inquiry. In either case there must be a parallelism of structural processes between the parasites and the decaying constructions from which they take their existence. Dermatologists are agreed that whatever be the source of the originating germs of favus and like forms, they can luxuriate only in failing constitutions, and are to be extirpated by constitutional melioration, just as the forms of structural degradation in the lung. Thus the essential relation between the development of masses of favus and of masses of tubercle is one of likeness.

It seems, therefore, worth while to consider more particularly the reason of tubercular generation, taking its generation in the lung as an instance of its modes. Phthisis pulmonalis is a chronic pulmonary disease, as opposed to acute pneumonia; and nearly all chronic thoracic diseases have relations with phthisis. We could not possibly have the two opposite modes of disease—the acute and the degenerative—better contrasted, the former due to external hindrance or violence, the latter to internal weakness. I have preferred the word "degenerative" before the word "chronic," as I consider the distinction of time to be always accidental, and often fallacious. Degenerative disease, the so-called "chronic," is not a mere extenuation of the acute. The one may end in the other; the one may so pass into the other, or be so engaged with it, that demonstration alone cannot show their difference at any given moment; they are, nevertheless, always separable in reason. In the lung, as elsewhere, the acute disease is that which comes of causes from without, such as intropulsions by cold, mechanical injuries, or the sudden action of some poisons; the chronic (or degenerative) disease shows failure, on the other hand, from within; and according to the degree of internal weakness it presents many varieties of degeneration, from a slow development of inferior structural products to swift disorganization. Between acute pneumonia and ulcerative pneumonia, or phthisis, there lies a series of semi-acute, semi-degenerative pneumonias varying in character as the ratio of the external to the internal causes.

In slow phthisis small portions of the lung structure slip imperceptibly into the lower stages of organization, giving rise by loss of quality to increase of quantity or mass. Such masses are no longer fibro-cellular, but more or less cellular, passing into the amorphous, and hardening as their moisture evaporates from the lung. The establishment of small points of lesion is followed by a more or less efficient reparative process, which often excites inflammation at corresponding points of the pleura and other neighboring parts. The permanence of these masses or tubercles, like their origin, depends primarily on the stability of the circumjacent tissue, and they are themselves accidental manifestations. The etiology of phthisis pulmonalis, therefore, lies not in the tubercle, but in the properties of the lung-tissue and in the processes of its construction and degeneration.

If I may again refer to my former use of the words Construction and Degeneration, it will be seen that the former word signifies the elevation of organic matter through higher degrees of intensity and complexity, by the influence of neighboring matter already possessed of such properties; and that by degeneration I mean the resolution of such neighboring matter into more extense and simple forms, with conversion of tension into energy.

Let us now conceive an action of some depressing agent upon the whole body. In place of the highest degree of tension we shall get

a proportionate relaxation throughout the tissues. The tension between the tissues and the circulating fluids will yield, and will show itself in quickened pulse, defective cell-generation, weak and flabby tissues, and local changes in the relation of these to the blood, as seen in wandering congestions, perspirations, fluxes, and the like. Such symptoms are common in states of debility. These results become more manifest in more advanced states of depression. There is imperfect cell-generation, as seen in unhealthy mucous membrane on the tongue, stomach, and bowels; also in the loss of subcutaneous tissue, falling of hair, clubbing of nails, and like signs. As the depressing cause continues, failing of function and structure must penetrate deeper, until some one or more of the vital organs are affected, and death sooner or later ensue.

Such a simple depressing influence ending in death, we see experimentally produced in the case of negroes, monkeys, dromedaries, &c., when transferred from a warm to a colder or less pure atmosphere. Such a form of decay and death, again, results from the action of an exhausting disease like diabetes. It becomes, then, a most interesting question with such conditions to determine which internal organ or organs will first give way. Given a body with no special tendency to disease, and a due molecular tension throughout, which internal organ or organs will first give way on the lessening of such tension by any simple depressing cause?

The remarkable constancy with which degenerative pulmonary disease shows itself after a more or less prolonged action of depressing causes, would lead us to the conclusion that phthisis pulmonalis owed its appearance to no specific vitiation. This form of disease seems rather to be the most direct route taken by general structural failure. In such states, we should avoid speaking of the supervention of phthisis as the arrival of a new and distinct disease, and should rather speak of reaching phthisis as a particular stage on the way of dissolution. No doubt the lungs may, in certain individuals, be congenitally weak, and so liable, as any organ may happen to be liable, to degeneration, in spite of all circumstances. But it would also seem that in the healthy body, where all organs are of normal validity, the lungs are relatively the weakest in structure. When, therefore, depressing causes, original or accidental, acting upon such a body as a whole, become stronger than is compatible with completion of construction, the part where structure will first give way is probably somewhere in the lung. Clearly, when conditions are adverse, some part of the body must go first, unless all parts are of equal strength, which we believe not to be the case. Disease of such a part would then be common, and we should expect to see a previously healthy body put under exhausting conditions finding its way to disintegration along the line of the failure of such part.

Now no structure in adult man seems more likely to present such weakness than the lung. We see therein a structure exceedingly

delicate and exceedingly elaborate. Other parts may vie with the pulmonary structures in delicacy, but I think not in delicacy and complexity together. The lung has to strive, not only against the evanescence of delicate elements, but also against the demands of an elaborate organization of such elements. The degeneration of cells in the stomach is not so serious a matter as it would be did this necessity there also exist of reconstructing them after an intricate pattern. Hence the peculiar disadvantage at which the pulmonary structures stand; and hence their early liability to irreparable injury under the action of causes affecting the whole body alike. Of all the bodily organs, the lungs seem in the adult to stand the nearest to the brink of destruction.* Seeing, then, that the causes of phthisis are as many as exercise a common influence of depression, we need not look beyond for any specific vitiation in the blood or elsewhere. "*Frustra fit per plura, quod fieri potest per pauciora.*"

I presume, therefore, that as material is abstracted, say in diabetes, or as tension is diminished, say by change of climate, constitutional feebleness, or other causes, so all parts of the body become progressively degenerate, such degeneration being less or more important as it invades less and more important structures; and that such degeneration early becomes breach of continuity in the delicate and complex lung-structure, the activity of progressive ulceration being in an inverse ratio to the reparative power. Such causes, when they act powerfully, will bring on rapid destruction, as in the reported cases of starvation producing pulmonary gangrene; if they act with less energy, we shall only find a gradual accumulation of larger masses of an inferior product, in place of the less bulky but more highly organized lung-tissue.†

In like manner we shall find, according to the activity of the causes, degeneration more or less advanced in other organs, such as the heart, the liver, the stomach, or the intestines. All these degenerations belong to that pathological unity, the phthisical process, which is the process of simple structural disintegration of the human body. Of this process, ulceration of the lung is an early and serious manifestation.

Let us proceed a step beyond this point. The line of thought which leads to discovery of the relations which pulmonary degeneration bears to that of other organs, will lead us on to discovery of the relations which the degeneration of certain parts within the lung

* With advancing years the relative activity of organs among themselves varies, as the functions themselves are modified. Thus in early life it is not the pulmonary structure, but rather that of the constructive glands which seems to go first. That scrofula, which is simply a feebleness of the constructive powers, should commence in the constructive glands at a time when their delicacy of structure and their vascularity is greatest, and the demand upon them the strongest, is probable enough. With advancing years the conditions are changed, the glands are less active, and accordingly less liable to disease. The atrophy of all these glands in old persons is a regular observation in the dead-house. To this subject I hope to return.

† I may perhaps say here that I avoid in general any use of that metaphorical and deluding term "inflammation."

bears to that of the other parts. That rapid disintegration or gangrene of the lung which results from depressing causes of severe and rapid action, as it is quickly developed, so it owes its initial position in the lung more to the accidents of accession (such as slight passing congestions and the like) than do those slower degenerative processes which, being independent upon passing accident, obey some more uniform law. It is notorious that some uniform condition exists which determines degenerative disease towards the apices of the lungs. This condition, however, remains undiscovered. I have stated my belief that degenerative disease is early manifested in the lungs because of their more delicate and complex structure. Can we now extend this reasoning to the parts of the lungs itself? Let us take the lung in a simple state of its evolution; let us take, for example, the lung of a serpent. In it we find the vascularity and complexity towards the apex, while the base is a mere membranous bag. If we take the lung of a tortoise, we find a like relative distribution of the more and of the less delicate and complex tissues, though the fuller development of the whole organ makes the difference less obvious. As we pursue our investigations upwards, we find this distinction less and less manifest as the progressive evolution of pulmonary structure advances; so that in mammalia the distinction between apex and base is no longer evident. But it can scarcely be supposed that a law holding good for so many stages of the ascent is suspended for the remainder; and it is much to be wished that an accomplished microscopist would find leisure to investigate this matter. The result of my own slight observations, and of my inquiries among my friends, carries me only to this point —viz., that it seems true that the lung-structure in man becomes more delicate as it approaches the trachea.* All the analogy, indeed, afforded by the exquisite and continuous gradation of form and color in nature would prepare us to expect gradation of structure in the lung. This much is certain—that whatever may be true of the lung as a whole, the structure of the lobules is undoubtedly such as I have suggested. The structure of each lobule increases in coarseness from about the air-tube to the periphery; the extreme difference in size of the cells being in about the ratio of ten to one. Now when the degenerative tendency is so intense as to invade large parts of the lung from the beginning, as in pyæmia or large superficial burns, there we find disease starting in the finer portions of the lobules and progressing towards the coarser. In such pneumonias we accordingly find many foci of disease separated by more healthy tissue; and such states we call lobular pneumonias. Such pneumonias are, of course, degenerative, allied to phthisis, and opposed to the acute pneumonia.

In acute pneumonia, we find large portions of the lung uniformly

* In my microscopical researches I have had the advantage of friendly aid from the Rev. W. T. Kingsley, of Kilvington.

injured by the pressure of congestion, which acts thus uniformly in accordance with the law of gravitation. This disease, therefore, takes the bases of the lungs, which generally lie at greater disadvantage; or under certain circumstances it attacks the backs of the lungs when the congestion happens so to fall. Even at the bases the lung-structure is too delicate to bear a sudden intropulsion, which might have left other organs unharmed.

We seem, then, to have reached this point. Of all structures in the body the lungs are most liable to lesion, as being the most delicate and complex. Such lesion may arise by injury from without, giving rise to acute pneumonias, or by weakness from within, giving rise to degenerative pneumonias. The type of the former is common acute pneumonia of the bases; the type of the latter is an ulcerative pneumonia of the apexes, known as phthisis pulmonalis. Between these two extreme types lies a series of pneumonias, partaking more of the acute or more of the degenerative character, as congestion or structural weakness is the more efficient cause of their accession. At this point, having arrived at something like a period, I may close the present essay.

I have to thank the Editor of this Review for the opportunity of laying before the profession certain propositions, and their application in the case of diseases of the lung. That I have given in this essay a mere outline of this application, and have altogether declined the discussion of other forms of disease after a like manner, is due to a want of sufficient time and space at my disposal, and in no way to want of will. This, however, is the less to be regretted, as I think we have the necessary facts already among us. On reviewing the number of facts collected during several years past in illustration of my own opinions, I find few that are not in possession of my readers. What is wanted is not so much a wider knowledge of phenomena as a change in the point of sight from which we regard them. As physicians, we are oppressed with an overlying weight of doctrine handed down to us from their worships the practitioners of physic of years past.* The science of biology being then non-existent, and scientific method barely understood, half fanciful and half metaphysical interpretations were the fig-leaves by which their ignorance was concealed. Although their interpretations are now mostly changed, yet much of the nomenclature and of the terminology belonging to them remains. When these are stripped off the truer lines of modern thought will become more evident; diseases will be seen in their real light, no longer as separate entities, but as conditions of existence; biology will swallow up pathology; and partial and fragmentary conceptions will be replaced by unity and consistency.

* Fortunately the study of abstract Physiology is passing out of the hands of those who have to study the applied science. Hitherto this science has flourished as astronomy and meteorology would flourish if left to sailors. Clearly their first classification would be a "pathology" of storms and eclipses.

It will be a happy day for students when they are taught no more to see in the sick man a state made up of several diseases shaken together like bits of glass in a kaleidoscope; and when they are led rather to recognize in health, in disease, and in all the varieties of biological phenomena, but so many modes of being, and so many modes of life.—*British and Foreign Med.-Chir. Review.*

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, JANUARY 19, 1865.

The Responsibility of Criminals.—The circumstances of the Malden murder, which took place a twelvemonth ago, are undoubtedly still fresh in the recollection of our readers. The murderer was discovered at last, as much to the relief of his own weak spirit as of the public excitement. He was a young man, who had apparently never resisted a temptation to wrong-doing provided pleasure were to be gained by it, and who yet wished to preserve a fair character in the eyes of the world. To steal, to burn, to kill were the descending steps in crime taken to screen what was at first a slight slip from the path of rectitude, and taken, too, apparently without any attention to the warnings of conscience. The final crime was undoubtedly committed without long premeditation. He saw a large sum of money at the bank, and nothing to prevent its becoming his own but the life of another young man. Once in his possession, he would be relieved of the embarrassment into which previous temptations had led him. He deliberately goes home, procures his pistol, walks back and murders a fellow-being, against whom he has not the slightest personal ill-feeling. He was tried, confessed his guilt, and was sentenced to the extreme penalty of the law. It is not our intention to discuss the propriety of capital punishment, but so long as the law is as it is, and magistrates may pardon those condemned to life-long imprisonment for similar crimes, we must agree with the public in the justice of the sentence in this case.

We desire, however, to allude to the attempt, made in this instance as in so many others, to prevent its execution by raising the plea of insanity or imbecility. This plea was referred to a medical commission, composed of Dr. Tyler of the Mc Lean Asylum at Somerville, and Dr. Walker of the South Boston Institution, and the result of their examination of the condemned will be found below. It would seem as if it were thought by some that the mere act of murder were enough to establish the insanity of the person committing it, and that unless he feels at the moment of his crime its entire enormity he should be held irresponsible. To such and to all we recommend the perusal of the following temperate and most wise remarks upon the responsibility of the criminal in this case, nor do we see how the Committee on Pardons could have done otherwise, after such a report, than to refuse to recommend a mitigation of his sentence.

"*To His Excellency John A. Andrew, Governor of the Commonwealth:*

"In accordance with your wishes, we have endeavored to make a careful and thorough examination of the mental condition of Edward W. Green, now confined in the Middlesex County Jail.

"We have failed to discover any trace of insanity in him, nor can we consider him 'an imbecile.' But he is a man of inferior capacity, little education, and little desire for it, and of limited general information.

"His affections are strong. He is fond of children, and loves his wife and child.

"In all common matters of social life, his moral sense is quick and correct. He by no means confuses right with wrong. He had some notions of personal obligations to God, but of religious knowledge and experience he is most astonishingly ignorant.

"Until his arrest it appears he has led an idle, frivolous, selfish, self-indulgent life, though not given to the excesses *most* common to young men, caring for little but to be popular, to write a good hand, to drive a fast team, to eat, and to have a good time, giving hardly a thought voluntarily to other things than these, and rarely one to more religious subjects.

"He *knows* that he has committed a great crime, and that he deserves punishment for it. He *feels* in a measure that he has wronged the parents and friends of Converse, his own wife and child, and the community in which he lived, and in a measure he lamented this, but his greatest grief seems to be that by any act of his he should have placed himself in so sad a position.

"We cannot consider him irresponsible. He came to his crime as other men have come to great crimes, through a preparation of previous misdeeds, and by permitting the object of his desire to fill his whole field of view, and to utterly exclude every thing else. We believe that he was less qualified to resist the temptation to wrong doing than many other men, but that this disability grew rather from a neglect of cultivating his moral powers, than from any congenital absence thereof.

"We are ready to give a more detailed account of the examination, and our reasons for the above opinion, if your Excellency should desire it. Your obedient servants,

JOHN E. TYLER,
CLEMENT E. WALKER."

THE LATE JOHN L. FOX, M.D., SURGEON U.S.N.—At a meeting of the Boston Society for Medical Improvement, held Jan. 9th, Dr. J. B. S. JACKSON called the attention of the Society to an event of deep interest to most of those present, which had occurred since the last meeting; viz., the death of JOHN LAWRENCE FOX, M.D., Surgeon U. S. Navy. Although not officially connected with the Society, Dr. Fox had always been a regular attendant at its meetings by invitation, while residing in Boston and the vicinity; and had won the respect and esteem of its members by his interest in its proceedings, as well as by his high professional attainments and his amiable character.

Dr. JACKSON moved that the death of Dr. Fox be entered upon the Records of the Society.

Dr. Warren, in seconding the motion, expressed his high appreciation of the character and talents of Dr. Fox, whose death he considered a severe loss to the country.

Dr. Bowditch said he had for no one greater respect than for Dr. Fox. He was a man of honor, highly accomplished in his profession, and stood in the highest rank in the service. Dr. B. alluded to the last illness of Dr. Fox, and spoke of his enthusiastic and patriotic self-sacrifice; laboring to the last, even when very ill, and at length reluctantly quitting his post only at the solicitation of brother officers and friends.

Dr. Williams briefly alluded to the high moral and professional character of Dr. Fox, and to the great loss sustained by his friends and the public in his death.

Dr. Borland moved that the Secretary be requested to convey to the family of Dr. Fox the substance of the sentiments expressed on this occasion, and to cause the same to be printed in the Boston Medical and Surgical Journal.

The motions were unanimously adopted. F. Minot,

Sec. Boston Society for Med. Improvement.

Professor Brown-Sequard.—The lecture by Dr. Séquard on the physiological and morbid effects of a lesion of a lateral half of the spinal cord, which was delivered on Monday last at the Medical College to a large audience of physicians and students, was exceedingly interesting, and illustrated how much of practical importance in the study of the obscure diseases of the nervous tissues may be gained by a few operations on one of the lower animals. All will regret that the health of the distinguished lecturer is such as to prevent the delivery of an entire course this season. We trust that he will be able to return by the opening of the next winter term to resume the duties of his new professorship.

Changes in the New City Hospital.—We learn that Dr. John Homans has resigned his position as Senior Physician on the Medical Staff of the City Hospital, and that Dr. John B. Reynolds has been appointed to fill the vacancy. The public could hardly expect more of the former gentleman than to give this institution at its start the counsel and experience which his age and attainments have made so valuable; and its present crowded condition and popularity furnish a gratifying proof that he may retire without a doubt as to its future usefulness and entire success. The choice of his successor could not have fallen upon one more fit in every way to sustain its reputation.

Interesting Departure.—We take the following effusion from *Punch*. The subject to which it refers has so recently filled a large space in our pages that we think it will be read with a sympathetic feeling.

"There has been an unusual absence of ozone lately."—*Meteorological Correspondence, passim.*

Oh where, and oh where, is our usual ozone gone?
Its absence surely must have been remarked by every one.
Can nobody inform us why and whither it has flown?

Oh where, and oh where, did our usual ozone dwell?
'Twas somewhere in the atmosphere, but where I cannot tell;
You must ask Professor Airey, or some other learned swell.

Suppose, oh! suppose, that our ozone's in the sky!
Just for a change it may perhaps have thither tried to fly—
Can we exist without it, I wonder, if we try?

Explosion of Benzine Vapor.—The schooner Tropic Bird, lying in harbor at Carleton, New Brunswick, had her cabin newly painted and grained. Two seamen retired to rest in their berths, leaving a light and fire burning. They awoke an hour or two after to find themselves, and everything in the cabin, on fire. They made a desperate attempt to force the door, but the heat had so warped it that it could not be opened. A moment after there was a loud explosion, and the skylight in the roof of the cabin was blown off, the flames shooting up in a large column through the vent thus made. This of course attracted attention outside, and the fire was put out and the men rescued, in a terribly burned condition. The only explanation of this singular affair which has been suggested is, that sufficient gas was generated from the benzine in the fresh paint, confined as it was in a close apartment, to take fire from the candle.

The Preparation of Matches free from Phosphorus.—Hierpe has published (*Polytech. Centralblatt*, 1864, p. 696) the following receipts for a composition for the heads of matches, and for an igniting surface. That for the matches is as under:—

Chlorate of potash	4 to 6 parts.
Bichromate of potash	2 "
Ferric oxide	2 "
Strong glue	3 "

Oxide of iron may be replaced by oxide of lead or of manganese. The above preparation will not ignite on sandpaper, but requires a surface specially prepared for it, and the author employs the following on the boxes:—

Sulphide of antimony	20 parts.
Bichromate of potash	2 to 4 "
Oxide of iron, lead, or manganese	4 to 6 "
Glass powder	2 "
Strong glue or gum	2 to 3 "

Another composition is described by Dr. H. Poltzer (*Polytech. Centralblatt*, 1863, p. 1642). A solution of sulphate of copper is divided into two equal parts—one is supersaturated with ammonia, the other with hyposulphite of soda. The two solutions are now mixed, and the mixture is briskly stirred. A violet-colored powder now deposits, which is a compound, says the author, of hyposulphurous acid with oxide and suboxide of copper, soda and ammonia. A mixture of this salt with chlorate of potash detonates when struck with a hammer, and when rubbed in a mortar ignites and burns like gunpowder, leaving a black residue.

The above salt the author proposes to use for matches. It is not soluble in water, and the mixture with chlorate of potash is not hy-

groscopic. The mixture may be made with moist chlorate and the gum solution, and can be safely dried at 50° C. or higher. It inflames when rubbed on a rough surface, and the temperature developed is sufficiently high to ignite sulphur on the stick.

The only difficulty the author finds is in making the mass coherent: when dried on the stick he found that it would crack and drop off when rubbed. A manufacturer will probably soon overcome this difficulty.

The proportions made use of were one part of the copper salt, and two parts of chlorate mixed in a sieve, and then made into a mass with solution of gum, together with a little glass powder. This mixture was applied to matches dipped in sulphur as usual.—*Am. Jour. of Pharmacy*, from *London Chem. News*, Dec. 10, 1864.

The following recipe will furnish a preparation having the pharmaceutical properties of chlorodyne, according to Dr. Ogden:—℞. Muriate of morphia, grs. viij.; water, fℨss.; perchloric acid (25° B.), gtt. xx.; chloroform, fℨiss.; tinct. of Indian hemp, fℨi.; hydrocyanic acid (U.S.P.), gtt. xii.; molasses, fℨss.; oil of peppermint, gtt. ij.; oleoresin of capsicum, gtt. i. To the morphia and water in a small flask add the perchloric acid, and heat until a clear solution is obtained. Then add the molasses, previously warmed to render it fluid. Heat the mixture, and agitate well. When cold, add the other ingredients, and mix thoroughly.—*Am. Jour. of Pharmacy.*

VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, JANUARY 14th, 1865.

DEATHS.

	Males.	*Females.*	*Total.*
Deaths during the week	25	40	65
Ave. mortality of corresponding weeks for ten years, 1853—1863,	41.3	36.0	77.3
Average corrected to increased population	00	00	84.53
Death of persons above 90	0	0	0

BOOKS RECEIVED.—A Treatise on Military Surgery and Hygiene. By Frank Hastings Hamilton, M.D. New York: Baillière Brothers.

MARRIED,—In Vassalboro', Me., Dr. A. J. Hart to Miss Sarah Ellen Coombs, both of China, Me.—In Southport, Ct., Frederick Danne, M.D., of New York, to Marian, daughter of Capt. Henry Wilson, of Southport.

DIED,—In this city, 17th inst., Louisa B., wife of Dr. Francis H. Brown and daughter of Charles F. Eaton, of Salem.—In Clinton, 11th inst., Pearson T. Kendall, aged 73.—In New York, Dr. A. B. Snow, Surgeon 1st Corps N. Y. Engineers.—Dec. 7th, of typhus fever, Dr. Moses H. Ranney, Superintendent of New York City Lunatic Asylum, Blackwell's Island.

DEATHS IN BOSTON for the week ending Saturday noon, Jan. 14th, 65. Males, 25—Females, 40.—Accident, 1—anæmia, 2—apoplexy, 1—disease of the brain, 1—bronchitis, 2—cancer, 1—consumption, 11—convulsions, 5—croup, 1—debility, 1—diabetes, 1—diarrhœa, 1—diphtheria, 1—dropsy, 1—dropsy of the brain, 5—scarlet fever, 1—infantile disease, 1—intemperance, 1—disease of the kidneys, 1—congestion of the lungs, 3—gangrene of the lungs, 1—inflammation of the lungs, 4—marasmus, 1—measles, 1—paralysis, 1—phlebitis (of leg), 1—premature birth, 1—scalded, 1—smallpox, 4—suicide, 1—teething, 1—unknown, 4—whooping cough, 1.

Under 5 years of age, 25—between 5 and 20 years, 3—between 20 and 40 years, 19—between 40 and 60 years, 10—above 60 years, 8. Born in the United States, 44—Ireland, 16—other places, 5.